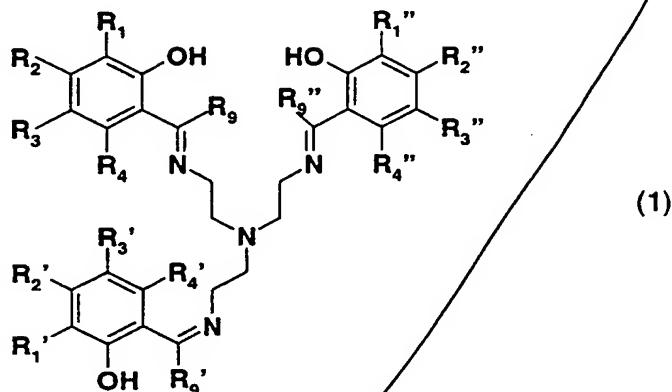


What is claimed is:

1. The use of metal complexes containing a tripodal ligand of the formula

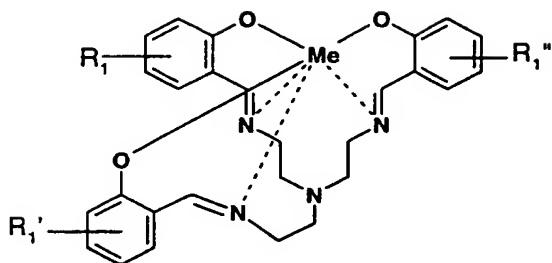


where

$R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4', R_1'', R_2'', R_3''$ and R_4'' are each independently hydrogen, cyano, halogen, SO_3M , where M is hydrogen, an alkali metal cation, an alkaline earth metal cation, ammonium or an organic ammonium cation, SO_2NH_2 , SO_2NHR_5 , $SO_2N(R_5)_2$, OR_5 or $COOR_5$, where R_5 is hydrogen or linear or branched C_1 - C_4 alkyl, nitro, linear or branched C_1 - C_8 alkyl, linear or branched fluorinated or perfluorinated C_1 - C_8 alkyl, NHR_6 , NR_6R_7 , $N^+R_6R_7R_{10}$ or linear or branched C_1 - C_8 alkyl- R_8 , where R_8 is OR_5 , $COOR_5$, NH_2 , NHR_6 , NR_6R_7 or $N^+R_6R_7R_{10}$, where R_6, R_7 and R_{10} are identical or different and each is linear or branched C_1 - C_{12} alkyl or where R_6 and R_7 combine with the joining nitrogen atom to form a 5-, 6- or 7-membered ring, which may contain further heteroatoms, and where R_9, R_9' and R_9'' are each independently hydrogen, linear or branched C_1 - C_8 alkyl or aryl, as catalysts for oxidations with peroxygen compounds.

2. The use according to claim 1, wherefor the metal complex is an Mn(III) and Fe(III) complex containing a ligand of the above formula (1), especially an Mn(III) and Fe(III) complex which contains a ligand of the above formula (1) and metal in a molar ratio of 1:1.

3. The use of the 1:1 metal(III) complexes of the formula



(2)

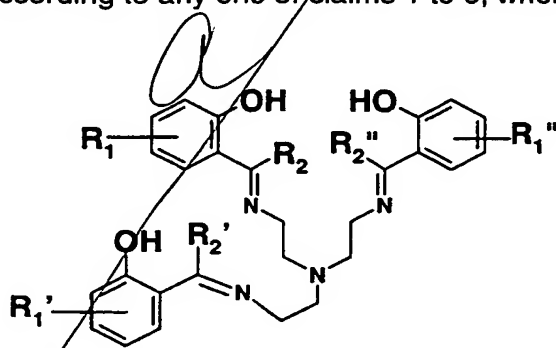
where Me is Mn or Fe, R_1 , R_1' and R_1'' are each independently hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, hydroxyl, nitro, NHR_6 , NR_6R_7 or $-N^+R_5R_6R_7$, where R_5 , R_6 and R_7 are each independently C_1 - C_4 alkyl, as catalysts for oxidations with peroxygen compounds.

4. The use according to claim 3, wherefor the metal complex is an Mn(III) complex.

5. The use of the metal complexes according to claim 1, containing a tripodal ligand of the formula (1), in aqueous solution together with peroxygen compounds for bleaching spots or stains on textile material or for preventing the redeposition of migrating dyes as part of a washing process, or for cleaning hard surfaces, especially crockery or glass.

6. The use of the tripodal ligand of the formula (1) according to claim 1 in aqueous solution together with peroxygen compounds for bleaching spots or stains on textile material.

7. The use according to any one of claims 1 to 6, wherefor the tripodal ligand conforms to the formula

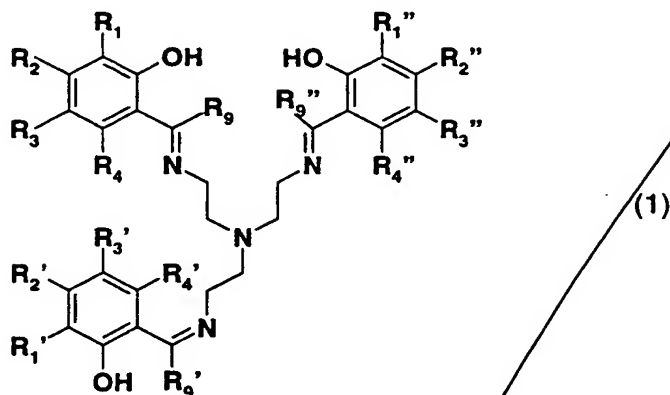


(3)

where

R_1 , R_1' and R_1'' are each independently hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, hydroxyl, nitro, NHR_6 , NR_6R_7 or $N^+R_5R_6R_7$, where R_5 , R_6 and R_7 are each independently C_1 - C_4 alkyl and R_2 , R_2' and R_2'' are each independently hydrogen, linear or branched C_1 - C_8 alkyl or aryl.

8. A manganese(III) or iron(III) complex containing a tripodal ligand of the formula

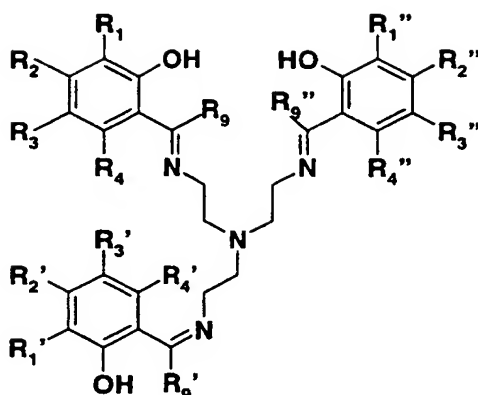


where

$R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4', R_1'', R_2'', R_3''$ and R_4'' are each independently hydrogen, cyano, halogen, SO_3M , where M is hydrogen, an alkali metal cation, an alkaline earth metal cation, ammonium or an organic ammonium cation, SO_2NH_2 , SO_2NHR_5 , $SO_2N(R_5)_2$, OR_5 or $COOR_5$, where R_5 is hydrogen or linear or branched C_1 - C_4 alkyl, nitro, linear or branched C_1 - C_8 alkyl, linear or branched fluorinated or perfluorinated C_1 - C_8 alkyl, NHR_6 , NR_6R_7 , $N^+R_6R_7R_{10}$ or linear or branched C_1 - C_8 alkyl- R_8 , where R_8 is OR_5 , $COOR_5$, NH_2 , NHR_6 , NR_6R_7 or $N^+R_6R_7R_{10}$, where R_6, R_7 and R_{10} are identical or different and each is linear or branched C_1 - C_{12} alkyl or where R_6 and R_7 combine with the joining nitrogen atom to form a 5-, 6- or 7-membered ring, which may contain further heteroatoms, and where R_9, R_9' and R_9'' are each independently hydrogen, linear or branched C_1 - C_8 alkyl or aryl, subject to the condition that in the manganese(III) complex at least one of the substituents $R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4', R_1'', R_2'', R_3'', R_4'', R_9, R_9'$ and R_9'' has a meaning other than hydrogen and that at least one of the substituents R_3, R_3' and R_3'' has a meaning other than chlorine when the substituents $R_1, R_2, R_4, R_1', R_2', R_4', R_1'', R_2'', R_4'', R_9, R_9'$ and R_9'' are all hydrogen.

9. A ligand of the formula





(1)

where

$R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4', R_1'', R_2'', R_3'', R_4''$ are each independently hydrogen, cyano, halogen, SO_3M , where M is hydrogen, an alkali metal cation, an alkaline earth metal cation, ammonium or an organic ammonium cation, $SO_2NH_2, SO_2NHR_5, SO_2N(R_5)_2, OR_5$ or $COOR_5$, where R_5 is hydrogen or linear or branched C_1-C_4 alkyl, nitro, linear or branched C_1-C_8 alkyl, linear or branched fluorinated or perfluorinated C_1-C_8 alkyl, $NHR_6, NR_6R_7, N^+R_6R_7R_{10}$ or linear or branched C_1-C_8 alkyl- R_8 , where R_8 is $OR_5, COOR_5, NH_2, NHR_6, NR_6R_7$ or $N^+R_6R_7R_{10}$, where R_6, R_7 and R_{10} are identical or different and each is linear or branched C_1-C_{12} alkyl and where R_6 and R_7 combine with the joining nitrogen atom to form a 5-, 6- or 7-membered ring, which may contain further heteroatoms, or where R_9, R_9' and R_9'' are each independently hydrogen, linear or branched C_1-C_8 alkyl or aryl, subject to the condition that at least one of the substituents $R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4', R_1'', R_2'', R_3'', R_4'', R_9, R_9'$ and R_9'' has a meaning other than hydrogen and that at least one of the substituents R_3, R_3' and R_3'' has a meaning other than chlorine when the substituents $R_1, R_2, R_4, R_1', R_2', R_4', R_1'', R_2'', R_4'', R_9, R_9'$ and R_9'' are all hydrogen.

10. A washing or cleaning process, which comprises adding to the liquor, which contains a peroxidic detergent, 0.1 to 200 μ mol per litre of wash liquor of one or more metal complexes containing a tripodal ligand of the formula (1) or an uncomplexed ligand of the formula (1).

11. A process for preventing the redeposition of migrating dyes in a wash liquor, which comprises adding to the wash liquor, which contains a peroxidic detergent, 0.5 to 150, preferably 1.5 to 75, especially 7.5 to 40, mg per litre of wash liquor of one or more metal complexes containing a tripodal ligand of the formula (1).

12. A laundry detergent comprising

I) 5 - 90%, preferably 5 - 70%, of A) an anionic surfactant and/or B) a nonionic surfactant,

II) 5 - 70%, preferably 5 - 50%, especially 5 - 40%, of C) a builder,

III) 0.1 - 30%, preferably 1 - 12%, of D) a peroxide, and

IV) 0.005 - 2%, preferably 0.02 - 1%, especially 0.1 - 0.5%, of E) a metal complex containing a tripodal ligand of the above-defined formula (1), the percentages all being percent by weight based on the total weight of the laundry detergent.

13. The use of metal complexes containing a tripodal ligand of the formula (1) as catalysts for reactions with peroxygen compounds in cleaning solutions for hard surfaces, especially for crockery.

14. A hard surface cleaner, especially a cleaner for crockery, preferably a crockery cleaner for use in machine cleaning processes, comprising a metal complex containing a tripodal ligand of the formula (1) according to claim 1 as a bleach catalyst.

15. The process for cleaning hard surfaces, especially crockery, using a cleaner according to claim 14.

16. The use of metal complexes containing a tripodal ligand of the formula (1) according to claim 1 as catalysts for reactions with peroxygen compounds in cleaning solutions for tiles and inter-tile joints.

17. The use of the metal complexes according to claim 1, containing a tripodal ligand of the formula (1), for killing bacteria or for protecting against bacterial colonization.

18. An aqueous suspension comprising

1 - 60% by weight, preferably 5 - 30% by weight, of a metal complex containing a tripodal ligand of the formula (1) according to claim 1,

a) 0.5 to 15% by weight, preferably 1 - 5% by weight, of a dispersant,

b) 0 - 10% by weight of a further ingredient, and

c) 15 - 98.5% by weight of water.

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19. A solid preparation comprising

- a) 1 - 99% by weight, preferably 5 - 50% by weight, of a metal complex containing a tripodal ligand of the formula (1) according to claim 1,
- b) 1 to 99% by weight, preferably 50 - 95% by weight, of a carrier material,
- c) 0 - 20% by weight of a dispersant,
- d) 0 - 10% by weight of a further ingredient, and
- e) 0 - 5% by weight of water.

20. An aqueous suspension or solid preparation according to either of claims 18 and 19, comprising a metal complex containing a tripodal ligand of the formula (1) according to claim 1 with an average particle size of less than 20 μm , especially between 0.1 and 15 μm .

21. The use of metal complexes containing a tripodal ligand of the formula (1) according to claim 1 as catalysts for reactions with peroxygen compounds for removing printing inks from printed waste paper (de-inking).

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